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BUREAU OF SHIPS GROUP

TECHNICAL INSPECTION REPORT

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By Authority of JOINT CHIEF OF STAFF ACTION OF 15 APR 1 1949

By John P. Galt Date 24 Apr 51

AFSOD

(6) OPERATION CROSSROADS.
U.S.S. BRACKEN (APA64).

TEST BAKER [U].

(9) Bureau of Ships group
technical inspection rpt.

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(11) 1947,

(12) 37p.

(14) XRD-121

Director
Defense Atomic Support Agency
Washington, D. C. 20301

OPERATION CROSSROADS

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TECHNICAL INSPECTION REPORT

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By Authority of Joint Chiefs of Staff Action of 11 April 1949
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APPROVED:

F.X. Forest,
Captain, U.S.N.

USS BRACKEN (APA64)

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1 JAN 1965

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SECRET

USS BRACKEN (APA64)

U.S.S. BRACKEN (APA 64)

SHIP CHARACTERISTICS

Building Yard: Consolidated Steel Corp.; Wilmington, California.

Commissioned: 4 October 1944.

HULL

Length Overall: 426 feet 0 inches.

Length on Waterline: 400 feet 0 inches.

Beam (extreme): 58 feet 0 inches.

Depth (molded to upper deck): 37 feet 0 inches.

Drafts at time of test: Fwd. 9 feet 8 inches.

Aft. 16 feet 6 inches.

Limiting displacement: 7,080 tons.

Displacement at time of test: 5,630 tons.

MAIN PROPULSION PLANT

Main Engines: Two sets of Westinghouse steam turbines, directly connected to Westinghouse main generators. Two main shaft motors.

Main Condensers: Two are installed in ship.

Boilers: Two Babcock and Wilcox boilers are installed in ship. 450 psi gauge - 750° F.

Propellers: Two are installed in ship.

Main Shafts: Two are installed in ship.

Ships Service Generators: Five are installed in ship.

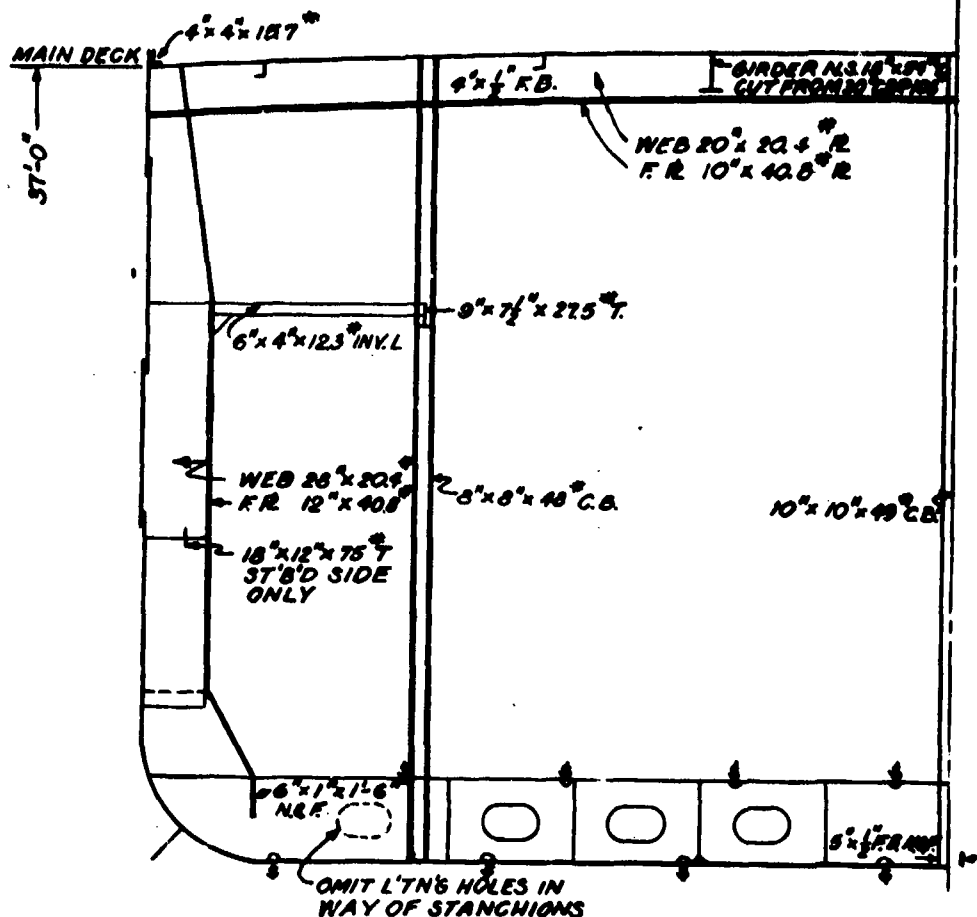
Two - 250 KW. - 450 V. - A.C.

One - 150 KW. - 450 V. - A.C.

Two - 100 KW. - 120/240 V. - D.C.

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USS BRACKEN (APA64)



FRAME 76 LOOKING AFT

MIDSHIP SECTION

TEST B

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U.S.S. BRACKEN (APA 64)

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TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition After Test.

(a) Drafts after test, general areas of flooding, sources.

There was no significant flooding, hence no change in drafts or list.

There was a small amount of water in forward hold and forward machinery space due to water entering vents from fire hoses of salvage tugs engaged in decontamination work. There was some water in the shaft alley bilges due to normal stern tube leakage.

(b) Structural damage.

HULL

No damage except for a hole punched in the side of the ship by a tug.

MACHINERY

No comment.

ELECTRICAL

There was no structural damage as a direct result of the bomb. A hole about 6'' x 36'' was punched in port side at frame 105 by salvage tug coming alongside.

(c) Other damage.

HULL

Not observed.

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USS BRACKEN (APA64)

MACHINERY

No damage was found by a careful visual inspection of all machinery. No machinery was operated because of radiological hazard.

ELECTRICAL

Close visual inspection revealed no damage to any electrical equipment, or electrical elements of ship control, fire control and gunnery.

II. Forces Evidenced and Effects Noted.

(a) Heat.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

None.

(b) Fires and explosions.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

None.

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USS BRACKEN (APA64)

(c) Shock.

HULL

Slight shock effect is noted in the shaking down of asbestos pipe insulation in the forward and after machinery space.

MACHINERY

No evidence.

ELECTRICAL

1. Slight shock was evidenced throughout the vessel by shakedown of dirt from inaccessible places and vent ducts and in machinery spaces by asbestos pipe insulation being loosened and dislodged.

2. There was no electrical damage as a result of shock.

(d) Pressure.

HULL

About 25 percent of the hatch boards of both upper-deck cargo hatches were dislodged and fell to the main deck.

MACHINERY

No evidence.

ELECTRICAL

1. Negative pressure is indicated by the lifting of approximately 25% of the hatch boards on forward and after cargo holds and positive pressure by soot blown from furnace registers in both engine rooms.

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USS BRACKEN (APA64)

2. There was no electrical damage as a result of pressure.

(e) Effects peculiar to the atom bomb.

HULL

None.

MACHINERY

None.

ELECTRICAL

None, other than radioactivity.

III. Results of Test on Target.

(a) Effect on machinery, electrical, and ship control.

HULL

Not observed.

MACHINERY

None.

ELECTRICAL

None.

(b) Effect on gunnery and fire control.

HULL

Not observed.

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USS BRACKEN (APA64)

MACHINERY

No comment.

ELECTRICAL

None.

(c) Effect on watertight integrity and stability.

HULL

None.

MACHINERY

No comment.

ELECTRICAL

None.

(d) Effect on personnel and habitability.

HULL

Except for the effects of radioactivity, it is considered that personnel and habitability would not have been affected.

MACHINERY

None except radioactivity, which was high when the ship was inspected 16 days after Test B.

ELECTRICAL

Personnel and habitability has not been affected except for possible adverse effect of radiation.

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USS BRACKEN (APA64)

(e) Effect on fighting efficiency.

HULL

None.

MACHINERY

None, except radioactivity.

ELECTRICAL

None from a material standpoint.

IV. General Summary.

HULL

No comment.

MACHINERY

The BRACKEN was beyond the effective range of the explosion of Test B, as far as mechanical damage is concerned.

ELECTRICAL

The position of this ship in the target array was outside the effective radius of the bomb. Although subjected to minor shock and pressure waves, these were not sufficient to cause any material damage and the vessel appears to be sound in every respect.

V. Preliminary Recommendations.

HULL

None.

MACHINERY

None.

ELECTRICAL

None.

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USS BRACKEN (APA64)

TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

(a) Drafts after test, general areas of flooding, sources.

There was no significant flooding, hence no change in drafts or list.

(b) Structural damage.

No damage except for a hole punched in the side of the ship by a tug.

(c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

None.

(b) Fires and explosions.

None.

(c) Shock.

Slight shock effect is noted in the shaking down of asbestos pipe insulation in the forward and after machinery space.

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USS BRACKEN (APA64)

(d) Pressure.

About 25 percent of the hatch boards of both upper-deck cargo hatches were dislodged and fell to the main deck.

(e) Effects peculiar to the Atomic Bomb.

None.

III. Results of Test on Target.

(a) Effect on machinery, electrical, and ship control.

Not observed.

(b) Effect on gunnery and fire control.

Not observed.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

Except for the effects of radioactivity, it is considered that personnel and habitability would not have been affected.

(e) Effect on fighting efficiency.

None.

IV. General Summary.

No comment.

V. Preliminary Recommendations.

None.

SECRET

USS BRACKEN (APA64)

VI. Instructions for loading the vessel specified the following:

ITEM	LOADING
Fuel oil	50%
Diesel oil	50%
Ammunition	50%
Potable and reserve feed water	95%
Salt water ballast	620 tons

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspection Report, submitted by the ship's force in accordance with "Instructions to Target Vessels for Tests and Observations by Ship's Force" issued by the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

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USS BRACKEN (APA64)

DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull damage.

No damage except for a hole punched in side of ship by a tug.

B. Superstructure.

No damage.

C. Turrets, Guns and Directors.

No damage.

D. Torpedo Mounts, Depth Charge Gear.

Not applicable.

E. Weather Deck.

About 25 percent of the hatch boards of the upper deck cargo hatch were dislodged and fell to the deck below (Photo. 4063-1 and 3; pages 32 and 33).

F. Exterior Hull.

At frames 104-105, port, just below the sheer strake, a hole approximately three square feet in area was punched through the shell plating when a tug collided with the vessel (Photo 4063-2; page 34).

G. Interior Compartments (above waterline).

No damage.

H. Armor Decks and Miscellaneous Armor.

Not applicable.

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USS BRACKEN (APA64)

I. Interior Compartments (below waterline).

No damage.

J. Underwater Hull.

No damage.

K. Tanks.

No damage.

L. Flooding.

There was a slight seepage through the stern tubes and from piping in the forward machinery space. The forward hold had some water which came through the cargo hatch.

	Draft forward	Draft aft	List
Before Test	9'-8"	16'-6"	1/4° stbd.
After Test	9'-8"	16'-6"	1/4° stbd.

The forward hold had 4 inches of water which came through the cargo hatch probably from washing down. The forward machinery space from normal seepage around piping and the star-board shaft alley from the stern tube had 4 inches of water. The port shaft alley bilge was filled by leakage through the stern tube.

All flooding could have been controlled by ship's force.

M. Ventilation.

No damage.

N. Ship Control.

No damage.

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USS BRACKEN (APA64)

O. Fire Control.

No damage.

P. Ammunition Behavior.

No damage.

Q. Ammunition Handling.

No damage.

R. Strength.

No damage.

S. Miscellaneous.

No comment.

SECRET

USS BRACKEN (APA64)

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TECHNICAL INSPECTION REPORT

SECTION II - MACHINERY

GENERAL SUMMARY OF MACHINERY DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

No data taken by machinery group.

(b) Structural damage.

No comment.

(c) Other damage.

No damage was found by a careful visual inspection of all machinery. No machinery was operated because of radiological hazard.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence.

(b) Fires and explosions.

No evidence.

(c) Shock.

No evidence.

SECRET

USS BRACKEN (APA64)

(d) Pressure.

No evidence.

(e) Effects apparently peculiar to the atom bomb.

None.

III. Effects of Damage.

(a) Effect on machinery and ship control.

None.

(b) Effect on gunnery and fire control.

No comment.

(c) Effect on water-tight integrity and stability.

No comment.

(d) Effect on personnel and habitability.

None except radioactivity, which was high when the ship was inspected 16 days after Test B.

(e) Total effect on fighting efficiency.

None, except radioactivity.

IV. General Summary.

The BRACKEN was beyond the effective range of the explosion of Test B, as far as mechanical damage is concerned.

V. Preliminary Recommendation.

None.

SECRET

USS BRACKEN (APA64)

DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall Condition:

The overall condition of the machinery was unchanged by Test B, as far as could be determined by visual inspection.

(b) Areas of Major Damage.

None.

(c) Primary Causes of Damage.

Not applicable.

(d) Effect of Target Test on Overall Operation of Machinery Plant.

The test had no effect on the overall operation of the machinery plant, insofar as could be determined by visual inspection.

NOTE: No machinery on this vessel was operated after Test B because of radiological hazard.

B. Boilers (S-51).

1. There was no apparent damage to the boilers.

2. Inspection covers were removed on #2 boiler and brickwork and tubes were found to be intact. #1 boiler was not inspected internally.

C. Blowers, Forced Draft (S-53).

No apparent damage.

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USS BRACKEN (APA64)

D. Fuel Oil Equipment (S-55)

No apparent damage.

E. Boiler Feedwater Equipment (S-56)

No apparent damage.

F. Main Engines (S-41)

No apparent damage.

G. Reduction Gears (S-42).

Not applicable.

H. Shafting and Bearings (S-43)

No apparent damage.

I. Lubrication System (S-45)

No apparent damage.

J. Condensers and Air Ejectors (S-46)

No apparent damage.

K. Pumps (S-47)

No apparent damage.

L. Auxiliary Generators (S-61)

No apparent damage.

M. Propellers (S-44)

The propellers were not inspected. The general condition of the ship indicates that they were not damaged.

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USS BRACKEN (APA64)

N. Distilling Plant (S-58)

There was no apparent damage to the distilling plant.

O. Refrigerating Plant (S-59)

No apparent damage.

P. Winches, Windlasses and Capstans (S-20, S-26).

No apparent damage.

Q. Steering Engine (S-22).

No apparent damage.

R. Elevators, Ammunition Hoists, etc. (S-78-83).

No apparent damage.

S. Ventilation (Machinery) (S-38).

No apparent damage.

T. Air Compressors (S-49).

No apparent damage.

U. Diesels (Generators and Boats). (S-50)

No apparent damage.

V. Piping (S-48).

No apparent damage.

W. Miscellaneous.

No apparent damage.

SECRET

USS BRACKEN (APA64)

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY OF ELECTRICAL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

1. Draft after test.

Not observed.

2. List.

Not observed.

3. Flooding.

None, other than shaft alley bilges due to normal leakage of stern tubes. There was a small amount of water in forward machinery space due to water entering vents from fire hoses of salvage tugs engaged in decontamination work.

(b) Structural damage.

There was no structural damage as a direct result of the bomb. A hole about 6'' x 36'' was punched in port side at frame 105 by salvage tug coming alongside.

(c) Other damage.

Close visual inspection revealed no damage to any electrical equipment, or electrical elements of ship control, fire control and gunnery.

II. Forces Evidenced and Effects Noted.

(a) Heat.

None.

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USS BRACKEN (APA64)

(b) Fires and explosions.

None.

(c) Shock.

1. Slight shock was evidenced throughout the vessel by shakedown of dirt from inaccessible places and vent ducts and in machinery spaces by asbestos pipe insulation being loosened and dislodged.

2. There was no electrical damage as a result of shock.

(d) Pressure.

1. Negative pressure is indicated by the lifting of approximately 25% of the hatch boards on forward and after cargo holds and positive pressure by soot blown from furnace registers in both engine rooms.

2. There was no electrical damage as a result of pressure.

(e) Any effects apparently peculiar to the atom bomb.

None, other than radioactivity.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

None.

(b) Effect on gunnery and fire control.

None.

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USS BRACKEN (APA64)

(c) Effect on water-tight integrity and stability.

None.

(d) Effect on personnel and habitability.

Personnel and habitability has not been affected except for possible adverse effect of radiation.

(e) Total effect on fighting efficiency.

None from a material standpoint.

IV. General Summary of Observers' Impressions and Conclusions.

The position of this ship in the target array was outside the effective radius of the bomb. Although subjected to minor shock and pressure waves, these were not sufficient to cause any material damage and the vessel appears to be sound in every respect.

V. Recommendations.

None.

SECRET

USS BRACKEN (APA64)

DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.

(a) Overall condition.

The overall condition of the electrical equipment remained unchanged.

(b) Areas of major damage.

There were no areas of any damage to electrical equipment.

(c) Primary causes of damage in each area of major damage.

No areas of major damage.

(d) Effect of target test on overall operation of electric plant.

1. Ship's service generator plant.

No effect.

2. Engine and boiler auxiliaries.

No effect.

3. Electric propulsion.

No effect.

4. Communications.

No effect.

5. Fire control circuits.

No effect.

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USS BRACKEN (APA64)

6. Ventilation.

No effect.

7. Lighting.

No effect.

(e) Types of equipment most affected.

No damage to any type.

B. Electric Propulsion Rotating Equipment.

No damage.

C. Electric Propulsion Control Equipment.

No damage.

D. Generators - Ships Service.

No damage.

E. Generators - Emergency.

No damage.

F. Switchboards, Distribution and Transfer Panels.

No damage.

G. Wiring, Wiring Equipment and Wireways.

No damage.

H. Transformers.

No damage.

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USS BRACKEN (APA64)

I. Submarine Propelling Batteries.

Not Applicable.

J. Portable Batteries.

No damage.

K. Motors, Motor Generator Sets and Motor Controllers.

No damage.

L. Lighting Equipment.

No damage.

M. Searchlights.

No damage.

N. Degaussing Equipment.

No damage.

O. Gyro Compass Equipment.

No damage.

P. Sound Powered Telephones.

No damage.

Q. Ship's Service Telephones.

Not Applicable.

R. Announcing Systems.

No damage.

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USS BRACKEN (APA64)

S. Telegraphs.

No damage.

T. Indicating Systems.

No damage.

U. I.C. and A.C.O. Switchboards.

No damage.

V. F.C. Switchboard.

No damage.

W. Miscellaneous.

Special electrical equipment installed for tests
by BuShips, Code 660 was undamaged.

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USS BRACKEN (APA64)

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SECTION IV

PHOTOGRAPHS

TEST BAKER

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AB-CR-227-289-30. View from off starboard bow after Test B.

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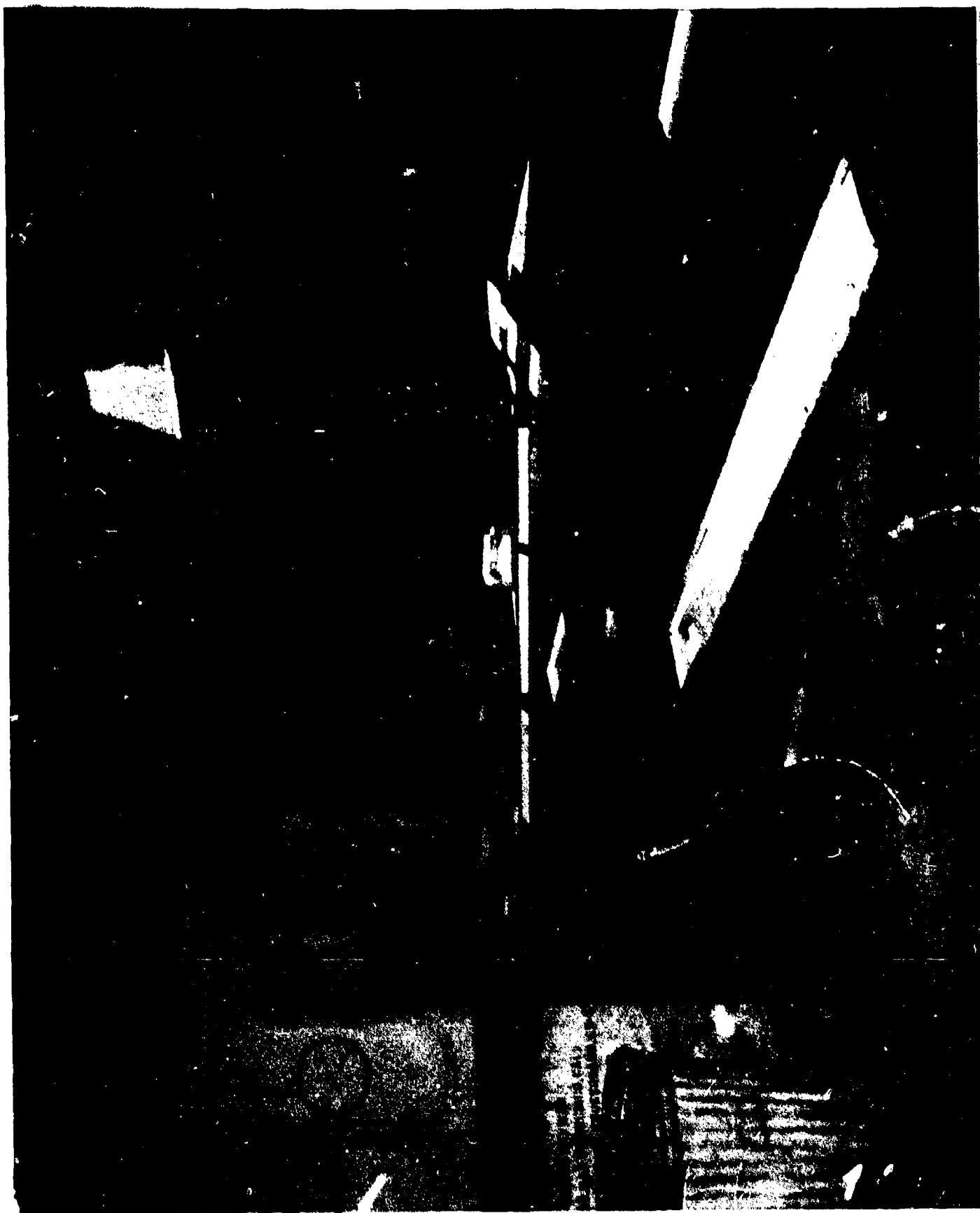
AB-CR-227-289-26. View from off port quarter after Test B.

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AB-CR-234-4063-1. Displaced hatch boards on main deck level below No. 2 cargo hatch.

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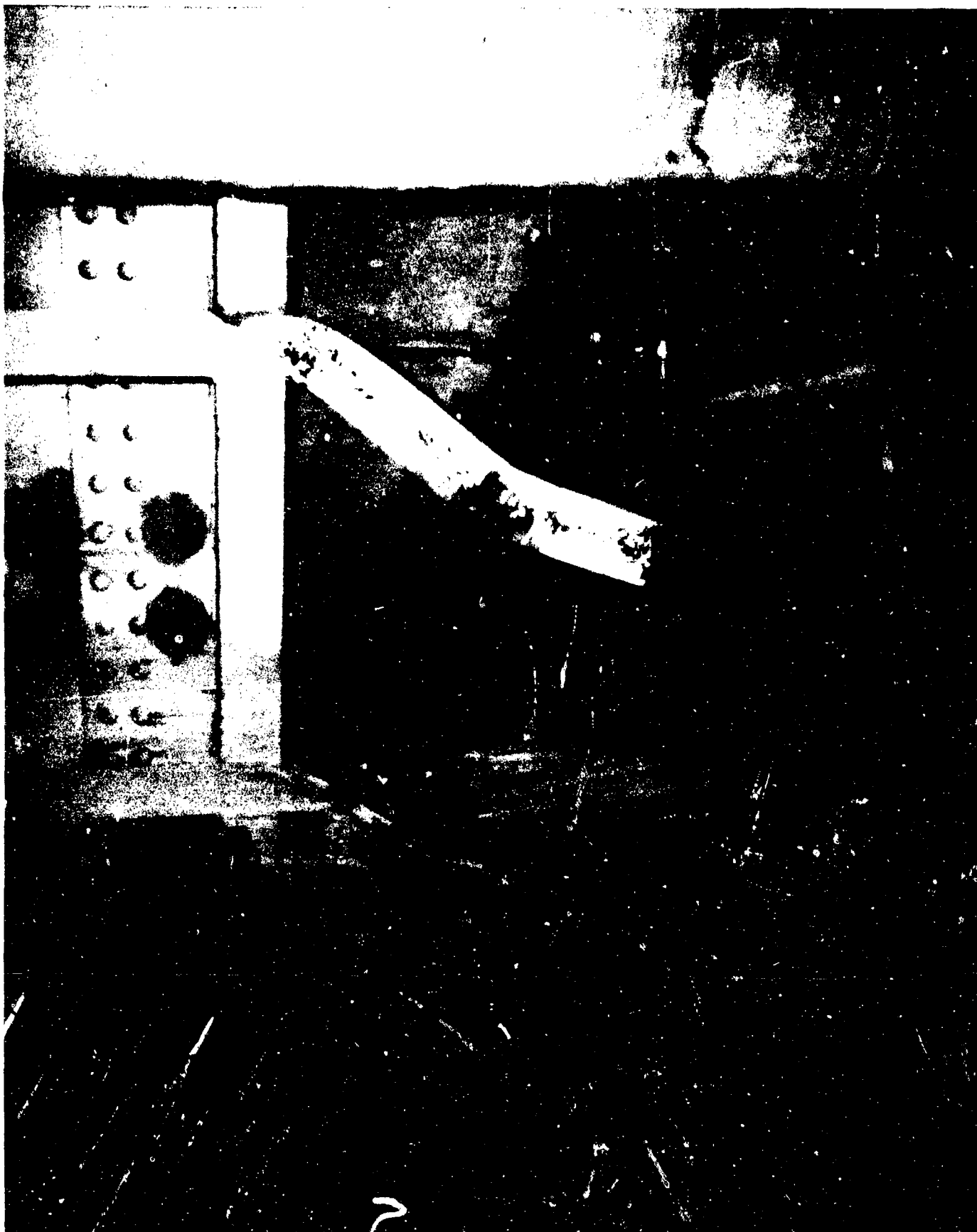
AB-CR-234-4063-3. No. 2 cargo hatch, upper deck.

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AB-CR-234-4063-2. Hole in port side at frames 104 and 105.

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APPENDIX

COMMANDING OFFICERS REPORT

TEST BAKER

SECRET

USS BRACKEN (APA64)

REPORT # 5

COMMANDING OFFICERS REPORT

The Commanding Officer has been aboard his ship only once, and that for a short time since B day.

No damage from the bomb explosion was apparent except displacement of about one-quarter of the hatch boards and except radioactive contamination.

From a distance of ten miles the ship was always visible, being only partly veiled by the cloud of mist which, expanding from the center, completely hid the CATRON (approximately 400 yards closer to the center) and did not reach the FILLMORE (about 400 yards further out).

No roll was visible but the ship was observed to pitch several times, estimated at 7°-8°.

The ship was abandoned with a slight starboard list. No change in draft or trim could be detected 2 weeks later.

(a) No damage to ground tackle was observed. The above-water bight of starboard chain had not opened up.

(b) No displacement of, or injury to machinery was noted. Brickwork in #2 boiler was intact, that of #1 not observed.

(c) No water in ship except normal slight leakage into shaft alley, and that introduced by tugs washing streams.

(d) Guns all functioned. Damaged by salt water washing.

On 10 August 1946 after various washes by tugs.

Weather decks showed contamination radiating 0.4-0.5 R per day, except in way of canvass and cordage, where the value rose to as much as 1.0 R. Cargo nets on deck on each side of #2 hatch showed 2.0 R and 2.5 R, which may have been caused by soaking up washing water off deck.

SECRET

USS BRACKEN (APA-64)

Below decks there was an average radiation of 0.03R per day, except where wash water had entered the ship (a) through the 2 main hatches partly opened by the bomb and (b) through doors and ports left open by advance boarding parties. The highest reading was approximately 1.0R from the water on main deck, #2 hold.

Washing down removed grease and rusted guns but they were all operative manually. Telescopic sights and M14 gun sights had some water in them.

There is a hole about 6" x 36" at frame 105, port side, about 6 feet below the main deck. Rumor is that salvage tug made it. No missile was found inside the ship.

In a caretaker status the shaft alley should be pumped out every 6 to 8 weeks.

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By Authority of JOINT CHIEFS OF STAFF ACTION OF 15 APRIL 1949
By John B. [Signature] Date 24 April 51
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USS BRACKEN (APA-64)



Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, Virginia 22310-3398

TRC

18 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER
ATTENTION: OMI/Mr. William Bush (Security)

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency has declassified the following reports:

✓AD-366588 4	XRD-203-Section 12✓
AD-366589 ✓	XRD-200-Section 9
AD-366590 ✓	XRD-204-Section 13
AD-366591 ✓	XRD-183
✓AD-366586 x	XRD-201-Section 10✓
✓AD-367487 4	XRD-131-Volume 2 ✓
✓AD-367516 4	XRD- 1 143✓
✓AD-367493 4	XRD-142 ✓
AD-801410L✓	XRD-138
AD-376831L✓	XRD-83
AD-366759 ✓	XRD-80
✓AD-376830L 4	XRD-79✓
✓AD-376828L 4	XRD-76✓
✓AD-367464 x	XRD-106✓
AD-801404L✓	XRD-105-Volume 1
✓AD-367459 x	XRD-100✓

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18 April 1997

Subject: Declassification of Reports

✓AD-367491 ✕	XRD-134-Volume 2 ✓
✓AD-367479 ✕	XRD-123 ✓
✓AD-367478 ✕	XRD-122 ✓
✓AD-367481 ✕	XRD-125 ✓
AD-367500 ✓	XRD-159-Volume 2 <i>reinst</i>
✓AD-367499 ✕	XRD-160-Volume 3 ✓
✓AD-367498 ✕	XRD-161-Volume 4 ✓
AD-367512 ✓	XRD-147
AD-367511 ✓	XRD-148
✓AD-367465 ✕	XRD-107 ✓
AD-366733 ✓	XRD-43
AD-367477 ✕	XRD-121 ✓
AD-367476 ✕	XRD-120 ✓
AD-367467 ✕	XRD-109-Volume 1 ✓
AD-367475 ✕	XRD-119 ✓
AD-367474 ✕	XRD-118 ✓
AD-367473 ✕	XRD-117 ✓
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AD-801405L ✓	XRD-113
AD-367470 ✕	XRD-112 ✓
AD-367469 ✕	XRD-111 ✓

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18 April 1997

Subject: Declassification of Reports

AD-801406L ✓ XRD-114.

In addition, all of the cited reports are now **approved for public release; distribution statement "A" now applies.**

Ardith Jarrett
ARDITH JARRETT
Chief, Technical Resource Center